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September 19, 1994

VIA MESSENGER

Rebecca Frey
Project Manager
U.S. EPA, Region V
77 West Jackson Blvd.
Chicago, Illinois 60604-3590

Re: Comments on Engineering Evaluation/Cost Analysis -- Kerr-McGee Residential Site and Portions of Kress Creek Site

Dear Ms. Frey:

With this letter, the City of West Chicago is submitting its preliminary comments on the *Engineering Evaluation/Cost Analysis (EE/CA) for the Kerr-McGee Residential Site and Portions of Kress Creek Site* dated August, 1994. It is the City's understanding that its comments will be added to the U.S. EPA's official administrative records for each of these sites.

Initially, the City agrees with the U.S. EPA's conclusion that source removal is the preferred alternative for both the Residential Site and the identified portions of the Kress Creek Sites. However, the City does have serious concern with unverified assumptions that appear to be controlling the site investigations and cleanup of the residential sites. Because these technical assumptions are unverified -- and may, based on the available data, actually be substantially inaccurate -- the U.S. EPA's site investigations may fail to identify sites with significant uranium and thorium contamination. Further, U.S. EPA may, because of these faulty assumptions declare other sites as clean, based solely on radium values, when the sites may have significant remaining uranium and thorium contamination.

We have divided our comments into general and specific items to facilitate U.S. EPA review and consideration.

General Comments

1. The Unverified Assumption of Secular Equilibrium. U.S. EPA at p. ES-1 of the EE/CA identifies the principal radioactive contaminants of concern as "thorium, uranium, and associated decay products such as radium, radon, and thoron." Yet U.S. EPA has structured its entire investigation and cleanup program on detecting certain *radium* (no thorium or uranium) values by means of either a gamma meter or by

gamma spectroscopy. By detecting total radium values for Radium 226 (Ra-226) and Radium 228 (Ra-228), U.S. EPA assumes it is also -- by proxy -- collecting accurate information on the quantity of Uranium 238 (U-238) and Thorium 232 (Th-232)that may be present.

The basis for U.S. EPA's assumption that its investigation of radium only, through gamma detection techniques, will also produce accurate quantification of uranium and thorium values is premised on the assumption that all of these radionuclides are in "secular equilibrium." U.S. EPA states this fundamental assumption throughout the EE/CA:

> "... U.S. EPA (1986) states that the analytical results from numerous samples indicates that the decay products are in relative radioactive equilibrium... In radioactive equilibrium, the specific activities (*i.e.*, pCi/g) of the various decay chain nuclides are approximately equal to each other...
>
> "...[B]ecause the daughter products are generally *assumed* to be in equilibrium, radium activities are excellent indicators of the presence of U-238, Th-232, and other daughter products." (emphasis added)
>
> EE/CA at 2-12
>
> "*Under natural conditions,* Ra-228, an alpha decay product of Th-232, is in secular equilibrium with Th-232; this means that the background level Ra-228 level is also about 0.85 to 1.6 pCi/g." (emphasis added)
>
> EE/CA at 2-6

This fundamental assumption of secular equilibrium means that if the U.S. EPA detects Ra-228 at 5 pCi/g, U.S. EPA will assume that the concentration of Th-232 is approximately 5 pCi/g. Similarly, if Ra-226 is detected at approximately 5 pCi/g, U.S. EPA will assume that the concentration of U-238 is also at 5 pCi/g. Unfortunately, the available data strongly suggests that Ra-228 is *not* in secular equilibrium with Th-232; nor is Ra-226 in secular equilibrium with U-238. Both the data collected by Kerr-McGee at the Rare Earths Facility, as well as the data collected by Kerr-McGee in evaluating the so-called "off-site" wastes, indicates that neither Th-232 nor U-238 is in secular equilibrium with its daughter radionuclides.

The consequences of failing to address this potential lack of secular equilibrium are serious. U.S. EPA is currently undertaking and expensive field survey of West Chicago residences based solely on radium values. U.S. EPA may declare a residence to be uncontaminated based on radium values -- when the investigation may have

failed to examine and detect unacceptably high and dangerous levels of Th-232 and U-238 at that same home.

We have raised this issue repeatedly with U.S. EPA staff and consultants. We were told that U.S. EPA would try to develop a statistically reliable database to determine if statistically significant correlations could be developed between the concentration of Ra-228 and Th-232 and Ra-226 and U-238. If such a database could be developed,[1] one could arguably set an upper bound assumption for the associated values of Th-232 and U-238 based on the Radium values. Unfortunately, it appears that this database has yet to be developed. Despite this lack of critical information U.S. EPA is proceeding with a very expensive -- and perhaps critically flawed -- site identification and characterization investigations.

Our citizens have already been through one flawed "clean-up" in the mid 1980s. We don't need another flawed clean-up based on non real-world assumptions which will leave the health and property values of our citizens significantly at risk.

The City asks U.S. EPA to immediately develop and conduct a correlation investigation to determine if highly reliable correlations (linking the measured value of Ra-228 with Th-232 and the measured value of Ra-226 with U-238) can be developed. In the absence of such correlations, we ask that U.S. EPA's residential site sampling program be revised -- and to the extent necessary redone -- to actually measure for these radionuclides.

2. Cleaning to Background. In oral presentations to the community, U.S. EPA has consistently stated that when contaminated property was discovered, the property would be cleaned to background. Such a practice would be consistent with Kerr-McGee's mid-80s practice of cleaning to background at locations it determined to be contaminated.

U.S. EPA has stated to community representatives that the basis of cleaning to background was based on the "ALARA" principle. Further, U.S. EPA has stated that exceptions to not cleaning to background would be rare and only based on extreme physical impracticability, *e. g.* a small patch of contamination under a foundation.

Finally, U.S. EPA has orally stated that the determination of whether an excavation was clean to background would be made *before* the excavation was backfilled.

These oral representations appear to be inconsistent with written documents prepared by U. S. EPA including the draft EE/CA. Would you please confirm in a

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1 We emphasize the contingent nature of the value of such a database. Because of changes in manufacturing processes and refining objectives over time, the Kerr-McGee wastes are highly variable as to relative concentrations of these radionuclides, both individually and as related to other nuclides. Data collection and analysis may determine that sufficiently reliable correlations cannot be established, and that individual testing for each radionuclide will be necessary.

revision to the EE/CA or other formal documentation that our understanding of your oral commitments to the residents of the City are correct.

3. **City Authority.** Throughout your discussion of alternatives, U.S. EPA has ignored the question of the City's authority regarding shipments of so-called "off-site" material to the Rare Earths Facility. Neither Kerr-McGee nor U.S. EPA can bring off-site wastes to that Facility unless and until they receive explicit written permission from the City. This requirement is ignored in your document.

We emphasize that the City has agreed to allow such shipment -- but only after a formal application for zoning and other approvals have been received and acted upon by the City, and only after we have received enforceable written assurances that all the material will be moved within the six month deadline imposed by the City. As of this date, Kerr-McGee has not filed a complete and sufficient application for such approvals.

4. **The Karpiel Statute.** In U.S. EPA's discussion of ARARs, U.S. EPA consistently ignored a State statute which calls for complete cleanup of the off-site areas within four years after commencement of construction. That statute (420 ILCS 42/1 et seq.) is a binding substantive State law implementing authority transferred to the State under the federal Atomic Energy Act. U.S. EPA's schedule for completing the cleanup of the so-called Residential Site, as well as all the other NPL sites within West Chicago must incorporate this deadline. The commencement of the cleanup program took place in the Summer of 1994. Cleanup of all the areas should therefore be finished by 1998.

Specific Comments

1. The EE/CA indicates it is presenting an evaluation of an array of remedial alternatives for these two sites. The remedial elements considered are identified as "no action", source removal, source removal with interim storage, source removal with off-Rare Earths Facility Staging area and source removal with re-contamination prevention. The only real alternatives included are no action and source removal; the other items are simply variations on source removal. Yet the discussion addresses the different versions of source removal as if they were real alternatives. The "no action" option is not accurately characterized either. Here no action really means addressing the Sites through the CERCLA remedial process, rather than the removal process, so that remediation would be delayed. The sections of the EE/CA dealing with the evaluations of alternatives should be re-drafted to reflect this fact. The City believes that this aspect of the document requires clarification

2. Page 1-3, Table 1-1 - Kress Creek Location Column - The entry in this column implies that Kress Creek runs from the Rare Earths Facility. That is not accurate. Kress Creek does not flow from the Rare Earths Facility, but a point south of the Facility boundary. The Table should be corrected.

3. Under the "Source of Contamination" entry for Kress Creek, it is stated that the source of contamination to the Creek is the storm sewer effluent from the Rare

Earths Facility. Again, that may not be accurate. Kerr-McGee and U.S. EPA have both sampled the effluent from the storm sewer and Kerr-McGee has reported that the effluent is not contaminated with radiologic materials. In addition, the Frame report stated that there are ores visible in the Creek bed. Assuming that is the case, the storm sewer should not be cited as the only possible source of contaminates to the Creek.

4. Page 1-4 - Section 1.3 Location of Study Area - The first paragraph of this section includes an extremely broad description of the Residential Site. As the City and U.S. EPA have discussed in the past, a definition of the Residential Site which purportedly includes any and all areas in and around the City that are potentially impacted does not comport with the NPL listing document or the Agency's more recent descriptions of the Site. According to the NPL Hazardous Ranking System document for this Site, 88 homes to the west of the Factory Facility make up the Site. Further, in our more recent discussions, the Residential Site has been defined by aerial survey boundaries generated based on an IDNS fly over of the area. That definition of the Residential Site is depicted at page 1-6 of the EE/CA.[2]

The City has made the U.S. EPA aware of the problems which stem from an overly broad view of the Residential Site. Residents and other property owners become understandably upset when they learn that their homes and properties may be in a Superfund Site even though no contamination has been identified at a given location. The EE/CA should be internally consistent and consistent with the Agency's current view of what constitutes the Residential Site.

5. Page 2-1, Section 2.1 - In the first sentence of this section, U.S. EPA describes the Rare Earths Facility as a thorium processing site. While it is true that thorium was processed, other materials were also produced at this Factory Site. It is important to note the production of these other products, since each process generated a waste stream with different radiologic and chemical make-up. These statements should be corrected to accurately reflect Facility operations as described by Kerr-McGee.

6. Page 2-12, Section 2.4.1.1 - In this section, U.S. EPA explains that it has relied on secular equilibrium in developing and applying a total radium in soil removal action criteria. However, as explained above, it is probable that secular equilibrium does not exist in the waste materials deposited in the Residential Site. Therefore, the assumption that using gamma logging to detect radium translates into the detection of all radiologic constituents present, may not be valid. U.S. EPA does acknowledge that certain of the testing done for other NPL Sites in West Chicago will be pertinent to the question of whether secular equilibrium exists or not. However, that information may not be available until after locations within the Residential Site are investigated or

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2 The more limited definition of the Residential Site is alluded to at pages 4-17 of the EE/CA as well. On that page, EPA states that the entire Residential Site study area is within two miles of the Factory Site.

remediated. Further, because during different time periods, different isotopes were being recovered, the data on the other NPL sites may not be relevant to conditions in the Residential Site. The City believes that the assumption of secular equilibrium - or an alternative assumption based on correlations between Radium values and TH-232 and U-238 -- must be tested and verified before actual removals are undertaken.[3]

7. Page 2-15, Section 2.4.1.2 - In this part of the EE/CA, U.S. EPA discusses the finding of metals at the Rare Earths Facility, Reed-Keppler Park and the Sewage Treatment Plant. However, metals have not been detected at the Residential Sites or in Kress Creek. This fact should be mentioned so that the public is in an informed position to evaluate the likelihood of metals being present and any attendant risk.[4]

8. Page 4-10, Section 4.1.6 - In discussing the alternative interim storage of materials, no mention is made of the fact that the City did offer the use of some of its property as an alternative temporary storage location. If City property were used, purchase would not be required. The City believes that U.S. EPA should factor this option into its evaluation of temporary storage alternatives.

9. Page 4-12, Section 4.1.8 - In this section, the Agency is dealing with the possible means to prevent recontamination of Kress Creek properties should the Creek flood. The City has a suggestion for a relatively low cost method that would prevent recontamination, and that does not have as many drawbacks as sheet piling. A geofabric filter approximately two feet high could be used along the Creek. That fabric would allow water through, while sloughing sediments back into the Kress Creek bed. The City suggests that the Agency evaluate the use of this fabric as an alternative to sheet piling.[5]

10. Page 4-19, Section 4.3.5 - Under the first bullet point, it must be noted that the City of West Chicago has independent approval authority for the movement of materials to and from the Rare Earths Facility.

Under the second bullet point, a one year interim storage period is provided. Kerr-McGee, the State of Illinois and the City of West Chicago have already entered

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3 The Agency again notes that it relied upon the existence of secular equilibrium for all decay chains in its description of the characterization of site contamination on page 2-28. As discussed earlier, reliance on this assumption may lead to inaccurate conclusions as to the contamination present at any given location.

4 On page 3-1, U.S. EPA mentions that it will be testing for metals as part of the pilot study. That fact should be noted at page 2-15. In addition, the results of all of the pilot study testing should be available to help define the appropriate scope of the removal actions before actual removals are undertaken.

5 The City also suggests that the Agency evaluate vacuuming the Creek as a quick, effective means of removing the source of contamination to the Residential Sites. If the Creek bed were vacuumed, the Agency could then monitor it as the RI/FS proceeded to see if additional remedial work were needed over time. After vacuuming, flooding of the Residential Sites in an interim period might not be as great a concern.

into a court-enforceable agreement specifying that the storage of offsite material at the Rare Earths Facility will not continue more than six months. That six month period should replace the one year period currently noted in the EE/CA.

11. Page 4-19, Section 4.3.6 - Here again, the Agency should add a statement that the City of West Chicago and/or DuPage County have independent approval authority over the activities described in this section. The local governmental entity having such authority depends upon the actual location of the activities.

12. Page 5-6, Section 5.1.2.2 - The first paragraph of this section should be clarified to more accurately describe the source of contaminants to the residential soils along Kress Creek. As the Agency has stated in other portions of the EE/CA, it is the surface water, *i.e.*, Kress Creek flooding, which has apparently contaminated these residential soils. That relationship should be more clearly considered in this paragraph, so that it does not appear as if the residential soils are the sole source of the contamination for that portion of the Kress Creek Site.

13. Page 5-7, Section 5.1.3 - The second paragraph of this sentence should be clarified to state that the ARARs will not be met during the period of remedial delay. However, once a remedial decision is made and action undertaken, the ARARs would have to be met.

14. Page 5-11, Section 5.2.2 - Here the Agency states that no additional permits or administrative requirements have been identified for the off-Rare Earths Facility staging contingency. Depending upon where the off-facility staging area is to be located, the City of West Chicago and/or DuPage County approvals would be necessary prior to the establishment of a staging area. The analysis of this alternative must take those independent local authorities into consideration.

15. Pages 5-20 and 5-21 - This comparison of alternatives approaches the "no action" option as if no remediation would ever take place. However, according to U.S. EPA's initial description of the alternative, "no action" really means delayed action. Therefore, this evaluation of alternatives should be modified to compare removals with action delayed for some period of years.

Also, in Table 5-4, there is an entry for "Implementability." That entry should include a statement that City of West Chicago and/or DuPage County approvals are required for all of the Alternative 2 variations. As suggested earlier, the City also believes that geofabric along Kress Creek should be viewed as a viable alternative to prevent recontamination.

The City is submitting these comments in the spirit of continued cooperation with U.S. EPA in achieving expeditious removal of contaminants from the Residential and Kress Creek Sites. We hope that our comments will assist the Agency in finalizing an accurate and easily understood EE/CA so that removals can proceed. If you have any questions about any of the City comments, please feel free to contact us.

Very truly,

Barbara Magel

cc: Steven J. Lakics
J. Donald Foster
George B. Levin

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